<u>Listing of Claims:</u>

1.   (Currently Amended) A system for providing video data, the system comprising:

a decoder apparatus configured to receive a bitstream comprising compressed video data and [[an]] <u>a residual</u> error vector index, and configured to output the video data in an uncompressed format; and

a <u>residual error</u> codebook comprising a set of <u>residual</u> error vectors and [[an]] <u>a residual</u> error vector index associated with each <u>residual</u> error vector, each <u>residual</u> error vector in the set of <u>residual</u> error vectors comprising an array of predetermined motion compensation errors.

2.   (Original) The system of claim 1 wherein the decoder apparatus performs motion estimation and compensation on a pixel by pixel basis.

3.   (Original) The system of claim 2 wherein the decoder apparatus performs pel-recursive motion estimation to produce motion vectors for each pixel in a block.

4.   (Original) The system of claim 3 wherein the decoder apparatus generates reconstructed video data using the motion vectors for each pixel in the block and using the error vector provided by the codebook.

5.   (Original) The system of claim 1 wherein the array of predetermined motion compensation errors include a predetermined motion compensation error for each pixel in the block.

6.   (Currently Amended) The system of claim 1 further comprising a codeword decoder that decodes a codeword for the <u>residual</u> error vector index.

7.   (Currently Amended) A method for decoding video data, the method comprising:

receiving a compressed bitstream containing the video data and [[an]] a residual error

vector index;

converting the residual error vector index to [[an]] a residual error vector, the residual

error vector comprising an array of predetermined motion compensation errors;

decoding a portion of the video data into an uncompressed format using the residual error

vector; and

outputting the video data in the uncompressed format.

8.   (Currently Amended) The method of claim 7 wherein the residual error vector is selected
from a codebook comprising a set of residual error vectors using the residual error vector index.

9.   (Currently Amended) The method of claim 7 further comprising repeating converting the
residual error vector index to [[an]] a residual error vector for each block in a frame of video.

10.   (Original) The method of claim 7 wherein generating the video data portion includes
performing motion estimation on each pixel in a block.

11.   (Original) The method of claim 10 wherein the motion estimation is pel-recursive motion
estimation.

12.   (Original) The method of claim 7 wherein the portion is a block of pixels.

13.   (Original) The method of claim 7 further comprising decoding a codeword associated
with the residual error vector index from the compressed bitstream.

14.   (Currently Amended) A system for providing a bitstream having compressed video data,

the system comprising:

an encoder apparatus that receives uncompressed video data and outputs compressed video data, the encoder apparatus comprising:

a <u>residual error</u> codebook comprising a set of <u>residual</u> error vectors and [[an]] <u>a</u> <u>residual</u> error vector index associated with each <u>residual</u> error vector, each <u>residual</u> error vector in the set of <u>residual</u> error vectors comprising an array of predetermined motion compensation errors;

a local decoder that generates synthesized video data according to [[an]] <u>a residual</u> error vector provided by the <u>residual error</u> codebook.

15.   (Original) The system of claim 14 further comprising a system encoder that embeds a selected <u>residual</u> error vector index in the compressed video data.

16.   (Original) The system of claim 14 wherein the local decoder performs motion estimation and compensation on a pixel by pixel basis.

17.   (Original) The system of claim 16 wherein the local decoder performs pel-recursive motion estimation to produce motion vectors for each pixel in a block.

18.   (Currently Amended) The system of claim 17 wherein the local decoder generates synthesized video data using the motion vectors for each pixel in the block and using the <u>residual</u> error vector provided by the <u>residual error</u> codebook.

19.   (Currently Amended) The system of claim 14 further comprising [[an]] <u>a residual</u> error calculator that compares the synthesized video data produced by the local decoder with the uncompressed video data.

20.   (Currently Amended) The system of claim 19 wherein the <u>residual</u> error calculator produces a measure of synthesis error for a block of video data.

21.   (Original) The system of claim 14 further comprising a cost calculator that produces a synthesis cost based on a general distortion measurement.

22.   (Currently Amended) The system of claim 14 further comprising an index selector that selects an output residual error vector index from the set of residual error vectors included in the residual error codebook based on the cost of synthesized video produced by the local decoder.

23.   (Currently Amended) A method for encoding video data, the method comprising:

(a) generating synthesized video data for a portion of video data using predetermined motion compensation residual errors;

(b) comparing the synthesized video data with raw video data for the portion to generate a synthesis error for the portion; and

selecting [[an]] a residual error vector index for the portion based on the synthesis error.

24.   (Currently Amended) The method of claim 23 wherein the residual error vector index is selected from a residual error codebook comprising a set of residual error vectors, each residual error vector in the set of residual error vectors comprising an array of predetermined motion compensation errors.

25.   (Currently Amended) The method of claim 24 further comprising repeating (a) and (b) for each residual error vector in the set of residual error vectors.

26.   (Original) The method of claim 23 wherein generating synthesized video data includes performing motion estimation on each pixel in a block.

27.   (Original) The method of claim 26 wherein the motion estimation is pel-recursive motion estimation.

28.   (Original) The method of claim 23 wherein the portion is a block of pixels.

29.   (Original) The method of claim 28 further comprising partitioning the video data into blocks.

30.   (Original) The method of claim 28 wherein the block has a rectangular or square shape.

31.   (Original) The method of claim 23 wherein the encoding is used within a multiple coding mode system.

32.   (Original) The method of claim 23 further comprising quantifying the synthesis error for the portion.

33.   (Currently Amended) The method of claim 23 further comprising embedding the residual error vector index into a compressed bitstream.

34.   (Currently Amended) A residual error codebook for use in encoding and decoding video data, the residual error codebook comprising a set of residual error vectors and [[an]] a residual error vector index associated with each residual error vector, each residual error vector in the set of residual error vectors comprising an array of predetermined motion compensation errors.

35.   (Currently Amended) The system codebook of claim 34 wherein each residual error vector in the set of residual error vectors is determined using an updated cluster center.

36.   (Currently Amended) The system codebook of claim 34 wherein the array of predetermined motion compensation errors includes a predetermined motion compensation error for each pixel in a block of video data.

37.   (Currently Amended) The system codebook of claim 34 wherein the codebook includes between about 256 error vectors and about 4096 error vectors.

38.   (Currently Amended) The ~~system~~ codebook of claim 37 wherein the <u>residual error</u> codebook includes between about 512 <u>residual</u> error vectors and about 2048 <u>residual</u> error vectors.

39.   (Currently Amended) The ~~system~~ codebook of claim 34 wherein the <u>residual error</u> codebook includes a codeword for each <u>residual</u> error vector.

40.   (Currently Amended) A method for constructing a <u>residual error</u> codebook, the <u>residual error</u> codebook comprising a set of <u>residual</u> error vectors and [[an]] <u>a residual</u> error vector index associated with each <u>residual</u> error vector, each <u>residual</u> error vector in the set of <u>residual</u> error vectors comprising an array of predetermined motion compensation errors, the method comprising:

     (a) generating a cluster center for each <u>residual</u> error vector in the <u>residual error</u> codebook;

     (b) receiving a set of motion compensation error blocks;

     (c) assigning each of the motion compensation error blocks to a cluster;

     (d) updating the cluster center for <u>residual</u> each error vector in the <u>residual error</u> codebook to form a new cluster center for each <u>residual</u> error vector in the <u>residual error</u> codebook; and

     (e) designating the new cluster center for each <u>residual</u> error vector in the <u>residual error</u> codebook as the array of predetermined motion compensation errors for each <u>residual</u> error vector in the <u>residual error</u> codebook.

41.   (Original) The method of claim 40 wherein assigning each of the motion compensation error blocks to a cluster comprises determining a quantitative difference between a block of motion compensation errors and a cluster center.

42.   (Original) The method of claim 40 wherein the cluster centers are generated randomly.

43.   (Original) The method of claim 40 further including repeating (c) and (d).

44.   (Currently Amended) A system for providing video data, the system comprising:

        means for receiving a compressed bitstream containing the video data and [[an]] a
residual error vector index;

        means for converting the error vector index to an error vector, the residual error vector
comprising an array of predetermined motion compensation errors;

        means for decoding a portion of the video data into an uncompressed format using the
residual error vector; and

        means for outputting the video data in the uncompressed format.

45.   (Currently Amended) A system for encoding video data, the system comprising:

        means for generating synthesized video data for a portion of video data using

predetermined motion compensation errors;

        means for comparing the synthesized video data with raw video data for the portion to

generate a synthesis error for the portion; and

        selecting [[an]] a residual error vector index for the portion based on the synthesis error.

46.   (Currently Amended) A computer readable medium including instructions for decoding

video data, the instructions comprising:

        instructions for receiving a compressed bitstream containing the video data and [[an]] a

residual error vector index;

        instructions for converting the residual error vector index to [[an]] a residual error vector,

the residual error vector comprising an array of predetermined motion compensation errors;

instructions for decoding a portion of the video data into an uncompressed format using the <u>residual</u> error vector; and

instructions for outputting the video data in the uncompressed format.